

### CLAIMS:

- 1 1. A process for producing a leukocyte composition for autotransplantation comprising the  
2 steps of:
  - 3 (a) providing an isolated blood sample from a donor individual;
  - 4 (b) selectively separating and collecting leukocytes from the sample using a leukapheresis  
5 device.
- 1 2. The process of claim 1 wherein the leukapheresis device is an automated leukapheresis  
2 device.
- 1 3. The process of claim 1 or claim 2 wherein the leukapheresis device comprises a closed or  
2 functionally closed system.
- 1 4. The process of claim 2 or claim 3 wherein the leukapheresis device is a continuous or  
2 interrupted flow centrifugation leukapheresis device or a continuous or interrupted flow  
3 filtration leukapheresis device.
- 1 5. The process of any one of the preceding claims wherein the leukapheresis device  
2 comprises: (a) a separation device (e.g. a centrifuge rotor or filter); (b) a leukapheresis tubing  
3 set; and (c) one or more pumps for conveying the sample through the tubing set and the  
4 separated leukocytes into a collection vessel.
- 1 6. The process of any one of the preceding claims for producing a leukocyte composition for  
2 restorative autotransplantation, further comprising the steps of:
  - 3 (c) rendering the collected leukocytes dormant (e.g. by cryogenic preservation); and  
4 optionally
  - 5 (d) revitalizing the dormant leukocytes (e.g. by thawing and/or dilution).
- 1 7. The process of any one of claims 1 to 5 for producing a leukocyte composition for  
2 remedial autotransplantation, further comprising the steps of:
  - 3 (c) treating the collected leukocytes; and optionally

4 (d) rendering the treated leukocytes dormant (e.g. by cryogenic preservation).

1 8. The process of claim 7 further comprising the step of:

2 (e) revitalizing the dormant treated leukocytes (e.g. by thawing and/or dilution).

1 9. The process of claim 6 for producing a leukocyte cell bank, wherein the process is applied  
2 iteratively to a series of blood samples from different donor individuals to produce a plurality  
3 of dormant (e.g. cryogenically preserved) leukocyte compositions, the process further  
4 comprising the step of retrievably depositing the dormant leukocytes for later  
5 autotransplantation.

1 10. A system (e.g. a closed or functionally closed system) for collecting an isolated blood  
2 sample from an individual comprising: (a) sampling means (e.g. comprising a needle) for  
3 collecting a blood sample from the individual; (b) a sample vessel in fluid communication  
4 with the sampling means; (c) a leukapheresis tubing set in fluid communication with the  
5 sample vessel, wherein the tubing set is blind, not comprising means for reintroducing any  
6 part of the fractionated sample back into the individual.

1 11. The system of claim 10 wherein the tubing set comprises one or more (e.g. three)  
2 leukocyte collection vessel(s).

1 12. The system of claim 10 or claim 11 wherein the tubing set further comprises a blood  
2 processing vessel (e.g. a centrifuge loop).

1 13. The system of any one of claims 6 to 8 wherein the tubing set further comprises a vessel  
2 for residual blood from which the leukocytes have been removed.

1 14. The system of any one of claims 10 to 13 further comprising a needle for conducting a  
2 blood sample from the individual into the sample vessel.

- 1 15. Apparatus for selectively separating and removing leukocytes from an isolated blood  
2 sample from an individual comprising a leukapheresis device loaded with the collection  
3 system of any one of claims 10 to 14.
- 1 16. The apparatus of claim 15 wherein the leukapheresis device is as defined in any one of  
2 claims 2 to 5.
- 1 17. A leukocyte composition obtainable (or obtained) by the process of any one of claims 1  
2 to 9.
- 1 18. A leukocyte cell bank obtainable (or obtained) by the process of claim 9.
- 1 19. The leukocyte composition of claim 17 for use in therapy or prophylaxis.
- 1 20. Use of the leukocyte composition of claim 17 for the manufacture of a medicament for  
2 use in autotransplantation (e.g. in CAT therapy or in restorative or remedial  
3 autotransplantation).